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**1 [The local disk controller](#)**

Gilbert E. Houtekamer

 August 1985 **ACM SIGMETRICS Performance Evaluation Review , Proceedings of the 1985 ACM SIGMETRICS conference on Measurement and modeling of computer systems**, Volume 13 Issue 2

 Full text available: [pdf\(1.02 MB\)](#)

 Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The performance of the I/O subsystem in the 370-XA architecture has been improved considerably with the introduction of the new channel subsystem, as compared to the System/370 architecture. The emphasis in the 370-XA architecture is on reducing the CPU load associated with I/O, and on reducing the congestion in multi-CPU, shared systems, by redesigning the channel system. In this paper we will show that a reallocation of the control unit logic may triple the channel subsystem's ...

**2 [The architecture of a fault-tolerant cached RAID controller](#)**

Jai Menon, Jim Cortney

 May 1993 **ACM SIGARCH Computer Architecture News , Proceedings of the 20th annual international symposium on Computer architecture**, Volume 21 Issue 2

 Full text available: [pdf\(1.04 MB\)](#)

 Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

RAID-5 arrays need 4 disk accesses to update a data block—2 to read old data and parity, and 2 to write new data and parity. Schemes previously proposed to improve the update performance of such arrays are the Log-Structured File System [10] and the Floating Parity Approach [6]. Here, we consider a third approach, called Fast Write, which eliminates disk time from the host response time to a write, by using a Non-Volatile Cache in the disk array controller. We examine three alternativ ...

**3 [Prefetching in segmented disk cache for multi-disk systems](#)**

Valery Soloviev

 May 1996 **Proceedings of the fourth workshop on I/O in parallel and distributed systems: part of the federated computing research conference**

 Full text available: [pdf\(1.57 MB\)](#)

 Additional Information: [full citation](#), [references](#), [index terms](#)
**4**
**[RAID-II: a high-bandwidth network file server](#)**



A. L. Drapeau, K. W. Shirriff, J. H. Hartman, E. L. Miller, S. Seshan, R. H. Katz, K. Lutz, D. A. Patterson, E. K. Lee, P. M. Chen, G. A. Gibson

April 1994 **ACM SIGARCH Computer Architecture News , Proceedings of the 21ST annual international symposium on Computer architecture**, Volume 22 Issue 2

Full text available:  pdf(1.43 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In 1989, the RAID (Redundant Arrays of Inexpensive Disks) group at U. C. Berkeley built a prototype disk array called RAID-I. The bandwidth delivered to clients by RAID-I was severely limited by the memory system bandwidth of the disk array's host workstation. We designed our second prototype, RAID-H, to deliver more of the disk array bandwidth to file server clients. A custom-built crossbar memory system called the XBUS board connects the disks directly to the high-speed network, allowing data ...

5 Potpourri: HLFSD: Delivering Email to Your \$HOME: Delivering Email to Your \$HOME ☐

Erez Zadok, Alexander Dupuy

November 1993 **Proceedings of the 7th USENIX conference on System administration**

Additional Information: [full citation](#), [abstract](#), [references](#)

We consider the problem of enabling users to access their mailbox files from any host on our local network, and not only on one designated "home machine". We require a solution which will not introduce any new single points of failure, force us to modify mail transfer agents and user agents, or require changes to the operating system kernels. In other words, minimize the amount of work needed by system-administrators and users. Our solution is to deliver mail into the users' home directories, ...

6 Networks: An information-interconnectivity-based retrieval method for network attached storage ☐

Iliyak Georgiev, Ivo I. Georgiev

April 2004 **Proceedings of the 1st conference on Computing frontiers**

Full text available:  pdf(302.56 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Network attached disk storage is characterized by independent network attachment and embedded intelligence. For Internet applications, it provides the key functionality of geographical replication and intelligent retrieval of data objects. The paper describes a latency reducing method based on the relative interconnectivity between data objects. We follow the locality-of-reference principle to partition interrelated data objects on close disk areas or network storage nodes. The method incorporate ...

**Keywords:** interconnectivity-based retrieval, network attached storage, storage objects clustering

7 Hard Disk Controller: The Disk Drive's Brain and Body ☐

September 2001 **Proceedings of the International Conference on Computer Design: VLSI in Computers & Processors (ICCD'01)**

Full text available:  Publisher Site Additional Information: [full citation](#), [abstract](#), [citations](#)

Abstract: Integration of the Hard Disk Controller (HDC) today has taken on an extensive amount of functionality. From the host interface, error correction code, disk sequencer, microprocessor(s), servo control logic, buffer controller, to the embedded memory, the HDC has become a true system on a chip. Depending on the product, embedded DRAM is used as buffering for data between the host and media and possibly for storing controller firmware. By bringing all these blocks into one chip, pin count ...

8 RAID: high-performance, reliable secondary storage ☐



Additional Information: [full citation](#), [index terms](#)

- 13 Transaktionsorientierte Datenverwaltung in einem intelligenten Disk Controller ☐  
Jürgen Kreyßig, Horst Schukat, Hans Christoph Zeidler  
March 1988 **Architektur und Betrieb vpn Rechensystemen, 10. GI/ITG-Fachtagung**

Additional Information: [full citation](#)

- 14 An intelligent disk controller—A processor system for file management and query functions ☐

J. Kreyssig, H. Schukat, H. Ch. Zeidlerr, H. Diel, W. Weber  
January 1989 **Microprocessing and Microprogramming**, Volume 25 Issue 1-5

Additional Information: [full citation](#), [index terms](#)

- 15 Processor Integration in a Disk Controller ☐

Lyle Adams, Michael Ou  
July 1997 **IEEE Micro**, Volume 17 Issue 4

Full text available:  [Publisher Site](#) Additional Information: [full citation](#), [abstract](#), [citations](#)

Applications with embedded processor cores represent a rapidly growing segment in industry today. One of the processor cores which has currently achieved high visibility in many different products is the ARM7TDMI core, developed by Advanced RISC Machines Ltd (ARM). The ARM7TDMI processor has recently been targeted for use in disk drive products by Palmchip Corporation. This paper details the experience at Palmchip Corporation of embedding the ARM7TDMI processor into their GreenLite disk drive co ...

**Keywords:** ARM architecture, embedded systems, disk drive controllers, RISCs

- 16 Floppy disk controllers feature some important extras ☐

S L Martin  
August 1986 **Computer Design**, Volume 25 Issue 15

Additional Information: [full citation](#), [index terms](#)

- 17 Hard disk controllers marked by bewildering variety ☐

S L Martin  
October 1986 **Computer Design**, Volume 25 Issue 19

Additional Information: [full citation](#), [index terms](#)

- 18 Interfacing to the PC floppy disk controller ☐

Larry Widing  
January 1990 **MS-DOS system programming (2nd ed.)**

Additional Information: [full citation](#), [index terms](#)



Peter M. Chen, Edward K. Lee, Garth A. Gibson, Randy H. Katz, David A. Patterson  
June 1994 **ACM Computing Surveys (CSUR)**, Volume 26 Issue 2

Full text available:  pdf(3.60 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Disk arrays were proposed in the 1980s as a way to use parallelism between multiple disks to improve aggregate I/O performance. Today they appear in the product lines of most major computer manufacturers. This article gives a comprehensive overview of disk arrays and provides a framework in which to organize current and future work. First, the article introduces disk technology and reviews the driving forces that have popularized disk arrays: performance and reliability. It discusses the tw ...


**Keywords:** RAID, disk array, parallel I/O, redundancy, storage, striping

## 9 Highly available systems for database applications



Won Kim

March 1984 **ACM Computing Surveys (CSUR)**, Volume 16 Issue 1

Full text available:  pdf(2.43 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)


As users entrust more and more of their applications to computer systems, the need for systems that are continuously operational (24 hours per day) has become even greater. This paper presents a survey and analysis of representative architectures and techniques that have been developed for constructing highly available systems for database applications. It then proposes a design of a distributed software subsystem that can serve as a unified framework for constructing database applica ...

## 10 The DEMOS file system



Michael L. Powell

November 1977 **Proceedings of the sixth ACM symposium on Operating systems principles**

Full text available:  pdf(761.03 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper discusses the design of the file system for DEMOS, an operating system being developed for the CRAY-1 computer at Los Alamos Scientific Laboratory. The goals to be met, in particular the performance and usability considerations, are outlined. A description is given of the user interface and the general structure of the file system and the file system routines. A simple model of program behavior is used to demonstrate the effect of buffering data by the file system routines. A dis ...

## 11 An analysis of the Cray-1 computer



Richard L. Sites

April 1978 **Proceedings of the 5th annual symposium on Computer architecture**

Full text available:  pdf(687.82 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The Cray-1 is an extremely high-speed computer, intended to be used for large floating-point scientific computations. However, it is a well-balanced machine that can gracefully be used on a wide class of problems. The machine has two major architectural innovations: (1) 128 backup registers which represent a new layer in the memory hierarchy, essentially a programmer or compiler-managed cache, and (2) 8 vector registers holding up to 64 words each, and operated on by vector instructions. In ...

## 12 Memory and subsystems boost disk controller performance



April 1990 **Computer Design**, Volume 29 Issue 9



**19 A simulation of a minicomputer-based data base transaction system** ☐


Lawrence K. Fried, David Pravidlo

December 1978 **Proceedings of the 10th conference on Winter simulation - Volume 2**Full text available:  [pdf\(818.90 KB\)](#) Additional Information: [full citation](#), [abstract](#), [index terms](#)

This paper is a presentation of a model which simulates an on-line minicomputer-based information system dealing with the installation and maintenance of private line circuits. The model was designed and implemented subject to several user objectives. An important objective is to identify serious bottlenecks early in system development. If such bottlenecks are identified early, the cost involved in relieving the congestion could be minimized. Moreover the model is used to study the effects ...

**20 JOYCE: A next generation personal computer** ☐

W. R. Franta

September 1980 **Proceedings of the 3rd ACM SIGSMALL symposium and the first SIGPC symposium on Small systems**Full text available:  [pdf\(593.06 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this paper we will detail the JOYCE hardware/software design decisions, cost, status and our plans for continued system development. We examine its features in light of some scheduled applications including CAI (a stand alone PLATO system), database management, electronic mail, etc. We will also detail our experiences relating to the acquisition of components necessary for the realization of JOYCE, including delivery delays, vendor promises and the gap between vendor product ( ...

**Keywords:** Fixed head disk, Microprocessor, Personal computer

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